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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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WORKMAN NYDEGGER 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111			EXAMINER LI, SHI K	
			ART UNIT 2613	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/629,228	Applicant(s) ARONSON ET AL.	
	Examiner Shi K. Li	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8-24 and 27-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-24 and 27-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/29/07, 12/10/07</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 4-5, 12, 16-17, 20-21, 24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (U.S. Patent 6,665,498 B1) in view of Grandpierre (U.S. Patent 5,854,704) and Casper et al. (U.S. Patent 6,075,634).

Regarding claims 1 and 16-17, Jiang et al. discloses in FIG. 2 a system board with a transceiver 210. The transceiver comprises a serial interface 260, an optical input port 240, and an optical output port 230. It is understood that the photodiode 216 converts the optical input into electrical signals and output to the IC chips 250 via an electrical output port and the laser 218 converts an electrical signal, received via an electrical input port from the IC chips 250, into optical beam 230. Jiang et al. teaches in FIG. 2 first ASIC 212 for equalizing/retiming and recovering electrical data. The difference between Jiang et al. and the claimed invention is that Jiang et al. does not teach the details of the equalization circuit. Grandpierre teaches in FIG. 3 an optical receiver comprising a clock recovery branch and an equalization branch (amplifier 44 and filter 46). Grandpierre teaches in FIG. 3 branching the received optical signal. However, Grandpierre teaches in FIG. 4 another version where branching is done after the optical signal has been converted to electrical signal by the detector 80. One of ordinary skill in the art would have combined the teaching of Grandpierre with the transceiver of Jiang et al. because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention. Thus it would have been obvious to one of ordinary skill in the art at the time

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the invention was made to use equalization circuit and clock recovery circuit, as taught by Grandpierre, in the transceiver of Jiang et al. because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention.

Grandpierre only teaches equalizing the signal received from the optical signal detector 10. It does not address equalization electrical signal to be converted to optical signal by the laser. Casper et al. teaches in FIG. 1 CDR circuit 21 for retiming electrical signal to be converted to optical signal by transmitter 30. One of ordinary skill in the art would have combined the teaching of Casper et al. with the modified transceiver of Jiang et al. and Grandpierre because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use equalization circuit and clock recovery circuit, as taught by Casper et al., in the modified transceiver of Jiang et al. and Grandpierre because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention.

Regarding claims 4-5, Grandpierre teaches recovers the clock signal before retiming.

Regarding claim 12, Jiang et al. teaches in col. 3, lines 65 10Gbps or higher.

Regarding claims 20-21, 24 and 31, Jiang et al. teaches in FIG.1 ASIC which is an integrated circuit.

3. Claims 2-3 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., Grandpierre and Casper et al. as applied to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31 above, and further in view of Agazzi et al. (U.S. Patent 7,245,638 B2).

Jiang et al., Grandpierre and Casper et al. have been discussed above in regard to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31. The difference between Jiang et al., Grandpierre and Casper et al. and the claimed invention is that Jiang et al., Grandpierre and Casper et al. do not teach decision feedback equalizer and feedforward equalizer. Decision feedback equalization and feedforward equalization techniques are well known in the art. For example, Agazzi et al. teaches in col. 6, lines 14-60 equalization using feed forward equalization (FFE) and decision feedback equalization (DFE). One of ordinary skill in the art would have combined the teaching of Agazzi et al. with the modified transceiver of Jiang et al., Grandpierre and Casper et al. because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use equalization circuit and clock recovery circuit, as taught by Agazzi et al., in the modified transceiver of Jiang et al., Grandpierre and Casper et al. because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention.

4. Claims 8-11, 18-19 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., Grandpierre and Casper et al. as applied to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31 above, and further in view of Vaidyanathan et al. (U.S. Patent 7,010,030 B2).

Jiang et al., Grandpierre and Casper et al. have been discussed above in regard to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31. The difference between Jiang et al., Grandpierre and Casper et al. and the claimed invention is that Jiang et al., Grandpierre and Casper et al. do not teach a separate coefficient module. Vaidyanathan et al. teaches in FIG. 2A-FIG. 2C adaptive decision feedback equalizers for a receiver 101. The equalizers include coefficients c_n and R_i .

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Vaidyanathan et al. teaches in FIG. 3 modules 215a and 215b for calculating the coefficients.

One of ordinary skill in the art would have combined the teaching of Vaidyanathan et al. with the modified transceiver of Jiang et al., Grandpierre and Casper et al. because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use equalization circuit and clock recovery circuit, as taught by Vaidyanathan et al., in the modified transceiver of Jiang et al., Grandpierre and Casper et al. because the combination would have yielded predictable result to one of ordinary skill in the art at the time of the invention.

5. Claims 13-14 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., Grandpierre and Casper et al. as applied to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31 above, and further in view of Ghiasi (A. Ghiasi, "'XFP' The Module Based 10Gig Universal Serial Interconnect 'XFI'", presentation material, April 8, 2002).

Jiang et al., Grandpierre and Casper et al. have been discussed above in regard to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31. The difference between Jiang et al., Grandpierre and Casper et al. and the claimed invention is that Jiang et al., Grandpierre and Casper et al. do not teach XFP-compliant module. Ghiasi teaches the XFP-compliant module. Ghiasi teaches on page 10 that the XFP is most flexible and operates over 8-12" (comparing to the 6" and 8" of other implementation). One of ordinary skill in the art would have been motivated to combine the teaching of Ghiasi with the modified optical module of Jiang et al., Grandpierre and Casper et al. because XFP, together with XFI, is most flexible and operates over 8-12". Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use XFP

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and XFI, as taught by Ghiasi, in the modified optical module of Jiang et al., Grandpierre and Casper et al. because XFP, together with XFI, is most flexible and operates over 8-12”.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., Grandpierre and Casper et al. as applied to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31 above, and further in view of Windus (U.S. Patent 4,932,038).

Jiang et al., Grandpierre and Casper et al. have been discussed above in regard to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31. The difference between Jiang et al., Grandpierre and Casper et al. and the claimed invention is that Jiang et al., Grandpierre and Casper et al. do not teach explicitly a adaptive equalizer in the transmit path. Windus teaches in FIG. 1 a signal processing circuit 16 (equivalent to equalizer) for conditioning electrical signal for the laser 17. One of ordinary skill in the art would have been motivated to combine the teaching of Windus with the modified optical transceiver of Jiang et al., Grandpierre and Casper et al. because an equalizer compensates distortion and improves signal quality. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an equalizer in the transmit path, as taught by Windus, in the modified optical transceiver of Jiang et al., Grandpierre and Casper et al. because a equalizer compensates distortion and improves signal quality.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., Grandpierre and Casper et al. as applied to claims 1 above, and further in view of Kurchuk (U.S. Patent 7,024,059 B2).

Jiang et al., Grandpierre and Casper et al. have been discussed above in regard to claims 1, 4-5, 12, 16-17, 20-21, 24 and 31. The difference between Jiang et al., Grandpierre and Casper et al. and the claimed invention is that Jiang et al., Grandpierre and Casper et al. do not teach

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adapting to changing temperature conditions. Kurchuk teaches in FIG. 3 an optical receiver with equalizer (tunable filter 306). Kurchuk also teaches in FIG. 3 temperature sensor 310 for sensing temperature and adjust the filter accordingly. One of ordinary skill in the art would have been motivated to combine the teaching of Kurchuk with the modified optical transceiver of Jiang et al., Grandpierre and Casper et al. because the approach of Kurchuk takes changing operating conditions into account and more accurately compensates for signal distortion over a wide range of operating temperature. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to sense temperature changes and adjust the equalizers, as taught by Kurchuk, in the modified optical transceiver of Jiang et al., Grandpierre and Casper et al. because the approach of Kurchuk takes changing operating conditions into account and more accurately compensates for signal distortion over a wide range of operating temperature.

Response to Arguments

8. Applicant's arguments with respect to claims 1-5, 8-24 and 27-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (7:30 a.m. - 4:30 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl
29 November 2007



SHI K. LI
PRIMARY PATENT EXAMINER